

B R E V I O R A

Museum of Comparative Zoology

CAMBRIDGE, MASS.

APRIL 23, 1953

NUMBER 12

A CAVE FAUNULE FROM WESTERN PUERTO RICO WITH A DISCUSSION OF THE GENUS *ISOLOBODON*

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In spite of the diligent work of H. E. Anthony nearly 40 years ago, the vertebrate paleontology of Puerto Rico must still be described as incompletely known. Anthony's labors have not been followed up in any systematic fashion by other investigators, and much therefore remains to be done.

The present paper places on record a collection from an area of the island relatively neglected by Anthony — the extreme western portion of Puerto Rico. The collection, though small and apparently representing a fauna of no high antiquity, permits new locality records for certain forms and includes a very interesting specimen of the genus *Isolobodon* which has compelled us to inquire into the variability of that genus and into the propriety of taxonomic subdivisions of it.

The materials here recorded were obtained by the senior author during the fall and winter of 1948-49 at the mouth of the Cueva Monte Grande between Mayagüez and Cabo Rojo (Distrito de Mayagüez, Pueblo de San German, Barrio de Monte Grande). The specimens have been deposited in the Museum of Comparative Zoology.

There were several levels in the deposit, and part of the deposit was kitchen midden, but no record was kept of the level at which specific material was found.

We cite below only the mammalian component of the faunule. There are, however, also fish, bird, turtle, snake and lizard bones. The lizard jaws have been identified by Rodolfo Ruibal and Max K. Hecht as all belonging to *Anolis cuvieri*, the living giant anole of Puerto Rico. No attempt was made to identify limb bones in any group. In the case of the mammals we take this opportunity to cite also localities not previously published but represented in the collections of the Museum of Comparative Zoology (MCZ) or the American Museum of Natural History (AMNH).

The Monte Grande Faunule

INSECTIVORA

NESOPHONTES EDITHAE

Two mandibular halves.

This large extinct insectivore of Puerto Rico has previously been reported from Hacienda Jobo, Morovis and Utuado. The MCZ collections show it also from Ciales, Manati and Rio Piedras.

CHIROPTERA

NOCTILIO LEPORINUS MASTIVUS

One complete skull. Two mandibles.

Though recorded by Anthony (1926) only from Old Loiza, this form was collected by Anthony and Goodwin at Vega Baja (AMNH specimen) during a 1926 West Indian expedition which has never been fully reported in the literature. The present is therefore the third record for this large fish-eating bat in Puerto Rico.

CHILONYCTERIS PARNELLII PORTORICENSIS

One skull.

The specimen so referred seems somewhat small for the species, but it is much too large to be the small Puerto Rican species of the genus (*C. fuliginosa inflata*). It is probably a young specimen.

This subspecies seems to be relatively rare in collections, only 11 specimens having been previously obtained, representing four localities: Cayey, Morovis, Pueblo Viejo and Trujillo Alto.

MONOPHYLLUS PORTORICENSIS

One skull.

This species was recorded by Anthony (1926) from five localities: Bayamon, Cayey, Morovis, Pueblo Viejo and Trujillo Alto.

BRACHYPHYLLA CAVERNARUM

Four more or less complete rostra. Six complete mandibles. Seven half-mandibles.

Recorded by Anthony from six localities: Cayey, Comerio, Corozal, Morovis, Pueblo Viejo and Trujillo Alto.

ARTIBEUS JAMAICENSIS JAMAICENSIS

One skull. Six mandibles.

This very common form was obtained or reported by Anthony from 14 localities.

EPTESICUS FUSCUS WETMOREI

One mandible.

Anthony (1926) reported this species from four localities (Maricao, Morovis, Pueblo Viejo and San German). He had collected it also at Trujillo Alto (AMNH specimen) during the 1916 expedition but somehow overlooked this record in his publication.

RODENTIA

RATTUS sp.

Two mandibles. One half-skull.

Rattus, as always in the Western Hemisphere, indicates that at least part of the Monte Grande faunule was post-Columbian in age.

ELASMODONTOMYS OBLIQUUS

A fragment of an upper incisor and a third right upper molar appear to represent this species.

This large extinct rodent has previously been reported only from Ciales, Morovis and Utuado. The MCZ collections add it also from Rio Piedras.

ISOLOBODON PORTORICENSIS

Nineteen skull fragments. Fifty-five half- or partial mandibles.

The bulk of the material from Cueva Monte Grande is of a medium sized hypsodont rodent. The enamel folds of the molars are nowhere completely separated to form laminae. The lateral surfaces of these

teeth have the pattern of striations characteristic of the genera or subgenera *Isolobodon* and *Aphactreus*. Even a cursory inspection of the molar pattern, however, rules out *Aphactreus* (Miller 1929a, pl. 2). The specimens then seem referable to *Isolobodon*. The only species of that genus which has previously been recognized on Puerto Rico is *Isolobodon portoricensis*, and almost all of the specimens agree well with this form in both size and pattern and may immediately be placed as representatives of this species.

Specimens of *Isolobodon portoricensis* from Monte Grande afford a new record of locality but less clearly than the other forms recorded above, since Anthony has already reported this species from nearby Cabo Rojo as well as from Ciales, Manati, Salina, San German and Utuado. (The MCZ adds Saliche and Aguirri.)

Four of the Monte Grande mandibles, however, are not immediately classifiable as *I. portoricensis* and require special attention. All are much smaller in size than fully adult *I. portoricensis*. Two are obviously immature. One of these is edentulous; the other has completely unworn crowns to the teeth, which are, therefore, not readily compared with the worn adult molar pattern. However, by breaking the ventral surface of the mandible, it has been possible to discover from underneath the pattern of the enamel ridges which will be eventually revealed by growth. The enamel pattern so revealed is exactly that of typical *I. portoricensis*.

The third small mandible is larger than the other two and although considerably smaller than adult *I. portoricensis* shows no morphological evidences of immaturity (last molar not fully erupted, unworn molar pattern, absence of bony shelf behind the last molar). The fourth mandible is similar to the third in size but is edentulous.

Subadult mandibles equivalent in size to these last two Monte Grande specimens are known from many localities elsewhere in Puerto Rico and in Mona and the Virgin Islands and are always indistinguishable from the adults except in size. It is, therefore, clear that small size is in itself no bar to considering the four questionable Monte Grande mandibles as *I. portoricensis*, and we refer the two obviously immature specimens to that species without further discussion. The fourth mandible, lacking teeth, manifests no distinctive characters and may tentatively be referred to the same species.

The third questionable specimen differs, however, in molar pattern from all the numerous specimens of *Isolobodon* with which it has been

compared. In any *Isolobodon* three important enamel folds are evident, a single main fold from the labial side and two counterfolds from the lingual side. In the Monte Grande specimen in question the anterior counterfold of the first molar shows a distinct constriction about midway along its length and, correlated with this, there is a marked broadening of the lingual lobe anterior to the counterfold. No similar constriction is present on the second and third molars; the anteriormost lingual fold may have been broadened on both these teeth, but fractures in the critical regions make it impossible to confirm this. No constriction comparable to that on the first molar, nor any broadening of the anterior lingual lobe at all similar to that seen on the first molar and probable on the second and third molars of the Monte Grande specimen, have been found in the more than 250 *Isolobodon portoricensis* mandibles examined. This third, small, Monte Grande mandible may, therefore, represent an exceedingly rare species, possibly reaching a smaller adult size, but closely related to *Isolobodon portoricensis*. On the other hand, it may represent a rare mutant condition in a subadult individual of *I. portoricensis*. Of these two alternatives we consider the second the more economical hypothesis, since we have been unable to find any other consistent differences between the third, small, Monte Grande mandible and the mass of compared *I. portoricensis*. We feel that the counterfold constriction might have been caused by a single mutant gene. It is interesting that this apparently aberrant individual probably never reached full adulthood.

In the course of this investigation, and while small size as a possible species character was still in question, the Monte Grande mandible and other *Isolobodon* material from Puerto Rico was carefully compared with material identified as *Isolobodon levir* from Hispaniola. It is worthwhile to consider here the status of the latter species, but before doing so a brief resume of its taxonomic history seems in order.

I. levir was first described by Miller (1922) as a distinct genus and species, *Ithyodontia levir*, from two molars found fossil at St. Michel. He did this believing that these isolated teeth were lower molars. Twelve mandibles from the same locality were identified as *Isolobodon portoricensis* without comment. In 1929, after studying much more material from the same locality, he realized that the two molars of "*Ithyodontia*" were actually upper molars of *Isolobodon*. In an attempt to save *I. levir* from complete synonymy, he noted that all St. Michel specimens were smaller than *Isolobodon* from other Hispaniolan

(kitchen midden) localities. The latter, in turn, were indistinguishable from Puerto Rican *I. portoricensis*. Although he could find no morphological characters to distinguish them, he nevertheless separated the St. Michel specimens as a distinct species on size alone. He pointed out, however, that Hispaniolan *I. portoricensis* came from kitchen middens, whereas *I. levir* came from owl pellet deposits. As he indicated, smaller species and individuals are usually found more frequently in owl deposits than in kitchen middens, but he believed that the presence in St. Michel caves of relatively large mandibles of the related genus or subgenus *Aphaetreus* ruled out the suggestion that in the two types of Hispaniolan *Isolobodon* he was dealing with large- and small-sized samples from the same population. In later papers (Miller 1929b, 1930) he records *I. levir* from several other Hispaniolan localities (San Gabriel, Monte Cristi, Constanza, Trujin), in Monte Cristi actually in association with *I. portoricensis*.

After extensive comparisons of *I. portoricensis* from Puerto Rico and surrounding islands (AMNH material) with *I. levir* from Hispaniola (MCZ material from Fort Liberté as well as material from the United States National Museum, especially mandibles from St. Michel, Monte Cristi and Anadel, but also skulls from these and other localities), we agree with Miller that no morphological characters are to be found to separate the two species. We fail, however, to see any clearcut size difference, since the smaller species "*levir*" appears to us to grade into the larger species *portoricensis*. "*I. levir*" mandibles from Hispaniola can be matched by equally small mandibles from Puerto Rico. We believe also that in some cases Miller introduced a false dichotomy into his measurements by comparing the largest specimens identified as *I. levir* with the largest *I. portoricensis*: it is unlikely that a bimodal distribution would have resulted in the one case of actual association of the two forms if measurements of all measurable specimens had been used. For these reasons we consider *Ithyodontia levir* Miller a complete synonym of *Isolobodon portoricensis* J. A. Allen. *Isolobodon* thus emerges as a monotypic genus or subgenus, undifferentiated from Hispaniola through Mona and Puerto Rico to the Virgin Islands. As has already been pointed out (Miller, 1918) this wide uniform distribution may well have been brought about by human transport. If that be true just what was the original range of the genus before the coming of man to the Antilles. This would seem impossible to determine now.

Acknowledgments. We are indebted to the Departments of Mammals of the Museum of Comparative Zoology, the American Museum of Natural History, and the United States National Museum for the privilege of examining and comparing specimens.

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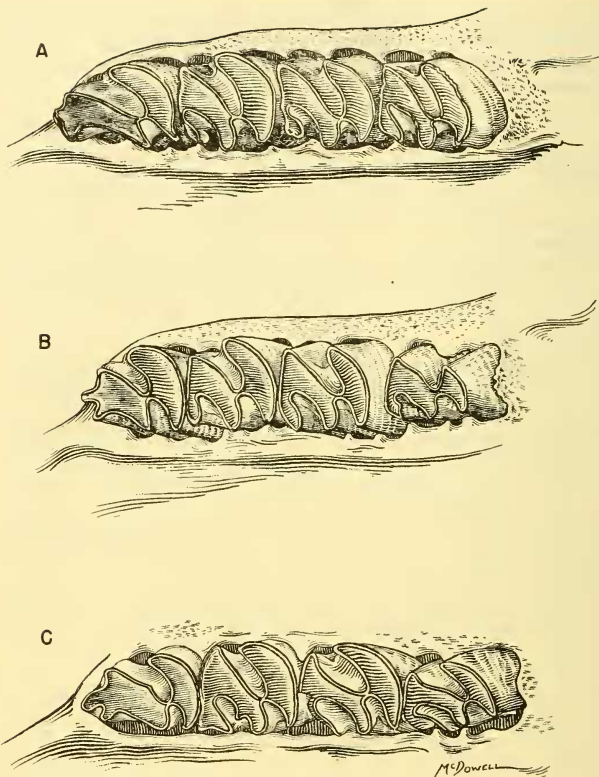
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PLATE

Crown views of mandibles of *Isolobodon*. A. "*Isolobodon levir*". U.S.N.M. No. 255874 from Monte Cristi, Dominican Republic. B. *Isolobodon portoricensis*. A.M.N.H. "0.1" Utuado, Puerto Rico. C. Aberrant Monte Grande mandible. M.C.Z. Cueva Monte Grande, Puerto Rico. (These specimens, all of about the same size, have been selected to show the extremes of variability of molar pattern.) 5 x natural size.